

REMARKS

This Amendment is filed in response to the Office Action mailed April 11, 2006. All objections and rejections are respectfully traversed.

Claims 1-35 are now pending in the case.

Claims 1, 2, 5-8, 10-12, 14, 16, 17 and 21-25 have been amended to better claim the invention.

Claims 26-35 have been added.

Request for Interview

The Applicant respectfully requests a telephonic interview at such time as the Examiner is ready to consider this case, but before the issuance of the next office action. The Applicant would appreciate the Examiner contact the Applicant's attorney at 617-951-2500 at a time convenient to the Examiner.

Claim Rejections - 35 U.S.C. §112

At paragraphs 2-3 of the Office Action, claims 1-25 were rejected under 35 U.S.C. §112, second paragraph.

First, claims 1, 17, 21, 22, and 23, and the claims that depend there from, were rejected as lacking antecedent basis due to the limitation "the size."

The Applicant thanks the Examiner for recognizing this oversight, and the Applicant now amends the claims to recite "a size." Accordingly, such rejection is now believed to be overcome.

Second, claims 1, 22, and 23, and the claims that depend there from, were rejected as lacking antecedent basis due to the preamble phrase "the step."

In regards to claim 22, and the claims that depend there from, the Applicant believes the rejection is moot due to changes in the claim.

As for claims 1 and 23, and the claims that depend there from, the Applicant respectfully requests the Examiner reconsider this rejection. The phrase “the steps” occurs only in the preamble of the claims and as a part of the widely used preamble formulation: “A method ...comprising *the steps* of.” The phrase “the steps” is widely understood in this context to refer to the method steps in the body of the claim. The Applicant posits that changing the phrasing to a less traditional phrasing would decrease, rather than increase clarity of the scope of the claims, as a reader may be unfamiliar with what is intended by a more unique preamble phrasing.

A quick key word search of issued patents reveals that phrasing nearly identical to the Applicant’s has been used in the claims of more than a half of a million issued patents since 1976, supporting a contention that it is widely understood and definite. Further, such phrasing is used in example claims provide in the MPEP. For example, MPEP(IV)(B)(2)(b) provides the example claim (emphasis added):

A digital filtering process for removing noise from a digital signal comprising *the steps* of calculating a mathematical algorithm to produce a correction signal and subtracting the correction signal from the digital signal to remove the noise.

In considering antecedent basis, the key is whether one may reasonably ascertain the meaning and scope of the claims. Indeed, MPEP 2173.05(e) states (emphasis added):

If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. Ex parte Porter, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992) ("controlled stream of fluid" provided reasonable antecedent basis for "the controlled fluid"). Inherent components of elements recited have antecedent basis in the recitation of the components themselves.

Since this goal has been met by the Applicant's claims, Applicant respectfully urges that the claims are definite.

Claim Rejections - 35 U.S.C. §102

At paragraphs 4-5 of the Office Action, claims 1-25 were rejected under 35 U.S.C. 102(e) as being anticipated by Modi et al., U. S. Patent No. 6,587,866, issued July 1, 2003 (hereinafter Modi).

The Applicant's claim 1, representative in part of the other rejected claims, sets forth:

1. A method for selecting a coprocessor from a plurality of coprocessors to process a packet, the method comprising the steps of:
determining a size of the packet;
determining a cost associated with the packet in response to the size of the packet, the cost representing a load associated with processing the packet;
determining an anticipated load for each coprocessor in the plurality of coprocessors using the cost; and
selecting the coprocessor from the plurality of coprocessors based on the anticipated load.

Modi discloses a load balancing scheme for distributing packets among a plurality of server nodes in a clustered processing system. *See* col. 3, lines 18-22 and col. 7, lines 61-64. The scheme uses one of a plurality of policy types, included "non-affinity" policy types where packets are distributed to any server node, and "affinity" policy types where packets from a single client are sent to the same server node. *See* col. 7, lines 61 to col. 8, lines 2 and col. 2, lines 42-47. The "non-affinity" policy types include the well-known "round robin" and "weighted round robin" techniques. In a weighted round robin technique, nodes are assigned differing weights to account for differing processing capabilities, and accordingly the probability of a particular packet being sent to a particular node is dependent on that node's relative weight. Modi does this by giving some nodes more entries in a packet distribution table (PDT) 304 than others. Specifically, "a high

performance server node is given more entities in PDT 204 than a slower server node that is able to process less traffic. In this way, the high-performance server node will, on average, receive more traffic than the slower server node.” See col. 8, lines 21-25 and col. 9, lines 46-52. Thereafter the IP address of a received packet is hashed over the packet distribution table (PDT) and the packet placed in a “bucket” associated with a particular node. See col. 10, lines 32-33 and col. 14, lines 59-67

The Applicant respectfully urges that Modi is silent concerning the Applicant’s claimed “*determining a size of the packet*” and “*determining a cost associated with the packet in response to the size of the packet*” and “*determining an anticipated load for each coprocessor in the plurality of coprocessors using the cost.*”

The Applicant claims using the *size of the packet* as one of the factors in determining which coprocessor will process the packet. As the Applicant describes in the Background section of the Application, prior techniques have suffered shortcomings since they simply balance the numbers of packets received by coprocessors, and generally do not take into consideration the amount of resources that may be required to process particular packets. For example, as described at page 3, lines 22-29 of the Specification, three 100-byte packets may be processed more rapidly than two 1400-byte packets, yet many prior techniques may not realize this, merely count numbers of packets, and therefore balancing loads unevenly.

Modi, lacks any suggestion of using the *size of the packet* as one of the factors in load balancing and therefore suffers the shortcomings that the Applicant recognizes and addresses. Modi simply assigns weights to “server nodes” as part of an implementation of the well-known weighted round-robin technique for load balancing. By weighting the round robin, fast nodes have more entries in a packet distribution table(PDT) increasing their likelihood to receive packets. Yet this technique in no way considers the *size of packets*, nor does it suggest *determining a cost associated with the packet in response to the size of the packet* or *determining an anticipated load for each coprocessor in the plurality of coprocessors using the cost.* Indeed, a system built according to Modi would

ignore packet size and consider a 100-byte packet indistinguishable from a 5000-byte packet. Thus a “cost” of a packet in Modi is determined irrespective of packet size.

Furthermore, the Applicant would like to address the statements at paragraph 5 of the Office Action that state *determining a size of the packet* is shown at col. 13, line 64 to col. 16, line 18 of Modi. Specifically the Office Action states “examiner interprets determining which bucket to chose based on IP address packet size and when the user sends data, the data is divided into packets discloses determining the size of the packet.” The Applicant respectfully urges that such interpretations are inaccurate as they equate clearly different quantities. For example “IP address” is a well known part of the TCP/IP protocol that specifies a particular computer on a network. For example an IP destination address of a packet may be “132.10.121.23” to specify a computer assigned IP address “132.10.121.23” The IP address in no way indicates the size of the packet. A large packet and a small packet both would have the same IP address if sent to the same destination. Further the common practice of dividing data into packets in no way suggest determining the size a particular packet. To when a packet is received it may be processed in many ways that do not depend upon its size. The Applicant specifically determines a packets size as part of the claimed technique. Furthermore dividing data into packets in no way suggests *determining a cost associated with the packet in response to the size of the packet*.

Accordingly, the Applicant respectfully urges that Modi is legally insufficient to anticipate the present claims under 35 U.S.C. §102 because of the absence of the Applicant’s claimed novel “*determining a size of the packet*” and “*determining a cost associated with the packet in response to the size of the packet*” and “*determining an anticipated load for each coprocessor in the plurality of coprocessors using the cost.*”

In addition, the Applicant would like to briefly discuss a few of the dependent claims.

At paragraph 5 of the Office Action, dependent claim 2 is rejected over Modi, specifically col. 1, lines 38-39 of Modi. Claim 2, sets forth:

2. The method of claim 1 wherein the step of determining a cost further comprises the step of:
calculating the cost using a rate associated with processing the packet.

In sharp contrast col. 1, lines 37-39 of Modi simply state:

The present invention relates to clustered computer systems with multiple nodes that provide services in a scalable manner.

The Applicant respectfully urges that the cited portion of Modi bears little relation to the Applicant's claim. Furthermore, there is no suggestion elsewhere in Modi of the claimed *calculating the cost using a rate associated with processing the packet*.

At paragraph 5 of the Office Action, dependent claim 4 and 5 are rejected over Modi, specifically col. 15, lines 39-41 of Modi. Claims 4 and 5, sets forth:

4. The method of claim 2 wherein the step of calculating the cost further comprising the step of:
dividing the packet's size by the rate.
5. The method of claim 2 wherein the step of calculating the cost further comprises the step of:
multiplying the packet's size by a multiplicative inverse of the rate.

In sharp contrast, col. 15, lines 39-41 of Modi simply state:

When the user sends data, a connection is established, the data is divided into packets, which are sent to the server during the connection.

The Applicant respectfully urges that the cited portion of Modi bears little relation to the Applicant's claims as it simply states that data is packetized. The Applicant, in contrast, claims specific mathematical operations, to wit, *dividing the packet's size by*

the rate, and multiplying the packet's size by a multiplicative inverse of the rate. Such specific mathematical operations are in no way suggested in the cited portion of Modi or elsewhere in the reference.

In the event that the Examiner deems personal contact desirable in disposition of this case, the Examiner is encouraged to call the undersigned attorney at (617) 951-2500.

In summary, all the independent claims are believed to be in condition for allowance and therefore all dependent claims that depend there from are believed to be in condition for allowance. The Applicant respectfully solicits favorable action.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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